Effects of Probiotic Supplementation on Hormonal Profiles,Biomarkers of Inflammation and Oxidative Stress in Women With Polycystic Ovary Syndrome: A Randomized, DoubleBlind, Placebo-Controlled Trial

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Abstract

Background: To the best of our knowledge, data on effects of probiotic administration on hormonal profles, biomarkers ofinflammation and oxidative stress in women with polycystic ovary syndrome (PCOS) are scarce. This investigation was conducted to assess the effects of probiotic supplementation on hormonal profles, biomarkers of inflammation and oxidative stress in womenwith PCOS.

Methods: This randomized, double-blind, placebo-controlled trial was conducted on 60 women with PCOS, aged 18-40 yearsold. Subjects were randomly assigned into 2 groups to receive either probiotics or placebo (n=30 each group) for 12 weeks. Metabolic profles were quantifed at baseline and after a 12-week intervention. **Results:** After the 12-week intervention, compared with placebo, probiotic supplementation signifcantly increased serum sexhormone-binding globulin (SHBG) (+25.9 ± 32.5 vs. +0.5 ± 15.6 nmol/L, $P < 0.001$) and plasma total antioxidant capacity (TAC) (+8.8 ± 120.5 vs. -98.3 ± 246.4 mmol/L, $P = 0.04$), and signifcantly decreased serum total testosterone (-0.2 ± 0.7 vs. +0.2 ± 0.6 ng/mL, $P = 0.03$), modifed Ferriman-Gallwey (mF-G) scores (-1.7 ± 1.5 vs. -0.2 ± 1.0, $P < 0.001$), serum high-sensitivity C-reactiveprotein (hs-CRP) (-1150.0 ± 1295.2 vs. +202.5 ± 1426.3 ng/mL, $P < 0.001$) and plasma malondialdehyde (MDA) concentrations (-0.2 ± 0.6 vs. +0.9 ± 1.3 µmol/L, $P < 0.001$). We did not observe any detrimental effect of probiotic supplementation on othermetabolic profles. **Conclusion:** Overall, probiotic

supplementation of PCOS women for 12 weeks had benefcial effects on total testosterone, SHBG,mFG scores, hs-CRP, TAC and MDA levels but did not affect other metabolic profles.
Keywords: Hormonal profles, Inflammation, Oxidative stress, Polycystic ovary syndrome, Probiotic

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